

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
ON APPEAL FROM THE EXAMINER TO THE BOARD
OF PATENT APPEALS AND INTERFERENCES**

In re Application of: Jack C. H. Chung et al.
Serial No.: 10/055,098
Filing Date: January 22, 2002
Group Art Unit No. 3623
Examiner: Andre D. Boyce
Confirmation No. 8102
Title: INTEGRATED DECISION SUPPORT FRAMEWORK FOR
COLLABORATIVE PRODUCT DEVELOPMENT

MAIL STOP APPEAL BRIEF - PATENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

REPLY BRIEF

Pursuant to 37 C.F.R. § 1.193, Appellants respectfully file this Reply Brief in response to the Examiner's Answer dated January 11, 2008.

REMARKS

Appellants filed a corrected Appeal Brief on October 5, 2007, explaining clearly and in detail why Claims 1-22 are allowable over the prior art cited by the Examiner in the Final Office Action mailed December 18, 2006. Specifically, Appellants demonstrated that rejection of Claims 1-3, 5, 9, 11-14, 16, 20, and 22 over *Meystel* is improper. Additionally, Appellants demonstrated that the rejection of Claims 4, 6-8, 10, 15, 17-19, and 21 over the proposed *Meystel-Johnston* combination is improper. For the reasons discussed below, Appellants respectfully submit that these rejections continue to be improper and should be reversed by the Board.

A. Claims 1-3, 9, 11, 12, 20, and 22 are patentable over *Meystel*

The rejection of Claims 1, 9, 11, 12, 20 and 22 as being anticipated by *Meystel* is improper for at least the following reasons.

- 1. *Meystel does not disclose, teach, or suggest “converting a second plurality of said received decision inputs to a plurality of mathematical representations”***

At pages 22-24 of the Appeal Brief, Appellants demonstrated that *Meystel* does not disclose, teach, or suggest “converting a second plurality of said received decision inputs to a plurality of mathematical representations,” as recited in Claim 1. Specifically, Appellants showed that the “search and retrieval algorithms” for extracting data disclosed at Column 14, lines 57-62 and Column 10, lines 9-21 of *Meystel* are not analogous to Appellants’ step of “converting a second plurality of said received decision inputs to a plurality of mathematical representations.” In the Reply Brief, the Examiner continues to cite these two sections as disclosing Appellants’ claim language. (Reply Brief, pages 9-10). Thus, Appellants reiterate and expand Appellants’ previous arguments now.

Meystel is explicitly described as using a multi-valued graph representation, without generating mathematical representations. Specifically, *Meystel* discloses that “[a] first organizational subsystem 20 acquires all inputs based information, such as the data 16, and organized such information for use by a modeling subsystem 22.” (Column 9, lines 36-39). “The modeling subsystem 22 determines functional relationships of the organized data, which

are searched by a behavior generation subsystem 24.” (Column 9, lines 39-41). Thus, *Meystel* merely discloses using functional relationships of the data to organize data within a data structure for improved searching. Appellants respectfully contend that using functional relationships to reorganize data is not analogous to “converting a second plurality of said received decision inputs to a plurality of mathematical representations,” as recited in Claim 1.

Other portions of *Meystel* cited by the Examiner relate to the extraction of data from the data structure. For example, *Meystel* discloses that an “associative fusion of data module 32 forms a statement of rules from the data stored and organized.” (Column 10, lines 8-10). Specifically, *Meystel* discloses:

The rules differ in the degree of belief which is assigned based on the repetitiveness of the particular experiences (statistical) or trustworthiness of the particular source of information (expert). The associative fusion of data module 32 comprises means for extraction of goal-independent data from the stored goal-dependent “experiences” in the form of generalized rules, or components of an automata transition function and state-output functions.

(Column 10, lines 10-18). Thus, according to *Meystel*, data may be extracted from the data structure based on generalized statistical or source-based rules. There is no disclosure in *Meystel*, however, that the statistical or source-based rules include “mathematical representations,” as recited in Claim 1. Further, Appellants respectfully contend that “extracting” data from a data structure is not analogous to “converting” that data into “a plurality of mathematical representations,” as recited in Claim 1.

Moreover, Appellants again note that *Meystel* specifically states that mathematical representations are not used. For example, in the Abstract, *Meystel* discloses that “the system does not use a predetermined mathematical model or algorithm.” As another example, *Meystel* states, “In contrast to prior art control systems, the present invention does not use a predetermined mathematical model or algorithm which defines the process in terms of a plurality of variables.” (Column 3, lines 2-5). “Rather, the present invention acquires system data and stores the data in a multiresolutional data structure.” (Column 3, lines 5-6). In the Final Office Action and the Reply Brief, the Examiner counters:

Meystel et al does not state that mathematical representations are not used. Rather *Meystel et al* simply states that it does not use a *predetermined* mathematical model or algorithm, but instead a fluid provisional data structure (column 3, lines 3-12) and that it *eliminates the stage* of mathematical abstraction and parameter identification (column 21, lines 59-63). As such, neither cited portion precludes *Meystel et al* from teaching Applicant's invention.

(Final Office Action, page 8; Reply Brief, page 10). Thus, the Examiner implies that while *Meystel* does not use a predetermined algorithm, *Meystel* uses some other mathematical algorithm that is not predetermined. Appellants disagree. *Meystel* actually discloses that “[t]he present invention **eliminates** the stage of mathematical abstraction and parameter identification and instead, uses collected measurements (the data 16) to form a distributed multiresolutional knowledge representation which is operated upon by search algorithms.” (Column 21, lines 59-63, emphasis added). Thus, the representation is specifically disclosed as being formed without mathematical representations. Further, even if *Meystel* uses “search and retrieval algorithms” to extract data from a data set, such extraction is not analogous to “converting a second plurality of said received decision inputs to a plurality of mathematical representations,” as recited in Claim 1. This fact is further emphasized by the touted advantage within *Meystel* that the multiresolutional decision support system “is able to integrate information from diverse sources or subsystems and, **with out using models or equations**, to formulate plans or rules of system operation which provide the best performance according to a set of criteria of interest, subject to the constraints of available information.” (Column 8, lines 35-40, emphasis added).

For at least these reasons, Appellants contend that *Meystel* does not disclose, teach, or suggest “converting a second plurality of said received decision inputs to a plurality of mathematical representations,” as recited in Claim 1. For analogous reasons, *Meystel* does not disclose, teach, or suggest similar claim elements recited in independent Claims 11, 12, and 22. Accordingly, Appellants respectfully submit that the rejections of independent Claims 1, 11, 12, and 22 and their respective dependent claims (including Claims 9 and 20) are improper and should be reversed by the Board.

2. *Meystel does not disclose, teach, or suggest “decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems”*

At pages 24 of the Appeal Brief, Appellants demonstrated that *Meystel* does not disclose, teach, or suggest “decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems,” as recited in Claim 1. Specifically, Appellants showed that “organizing data in a data structure for use by a modeling subsystem as disclosed at Column 9, lines 37-40 of *Meystel* is not analogous to Appellants’ step of “decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems.”

In the Reply Brief, the Examiner counters:

Meystel et al disclose the system 10 broken down into a plurality of subsystems including one or more operational modules, including an organizational subsystem 20 that acquires all input based information, and organizes such information for use by modeling system 22, wherein system 22 determines functional relationships of the organized data (column 9, lines 35-42).

(Reply Brief, page 10). Even to the extent that *Meystel* discloses organizing the data in the data structure and then determining functional relationships of the organized data, there is no disclosure in *Meystel* that either of these operations includes “decomposing **converted inputs to sub-problems**,” as recited in Claim 1. In fact, conspicuously absent from the Final Office Action’s allegation is any mention of sub-problems. Appellants submit that this omission is not coincidental since, as described above, *Meystel* does not use sub-problems or mathematical representations. At best, *Meystel* is a decision processor that simply integrates data into a data structure for searching. There is no disclosure in *Meystel* of “decomposing said converted first plurality of said received decision inputs and said converted second plurality of said received decision inputs to a plurality of sub-problems,” as recited in Claim 1.

For at least these reasons, Appellants respectfully submit that the rejection of independent Claim 1 and its dependent claims (including Claim 9) is improper and should be reversed by the Board. For analogous reasons, Appellants respectfully submit that the rejection of independent Claims 11, 12, and 22 and their respective dependent claims (including Claim 20) are improper and should be reversed by the Board.

3. *Meystel does not disclose, teach, or suggest “performing dependency propagation for said plurality of sub-problems.”*

The rejection of Claims 2 and 13 are improper at least because Claims 2 and 13 depend on independent Claims 1 and 12, respectively, which Appellants have shown above to be allowable. Additionally, Claims 2 and 13 are allowable over *Meystel* because the cited reference does not disclose, teach, or suggest the claim elements recited in Claims 2 and 13.

At page 26 of the Appeal Brief, Appellants demonstrated that *Meystel* does not disclose, teach, or suggest “performing dependency propagation for said plurality of sub-problems,” as recited in Claims 2 and 13. Specifically, Appellants showed that *Meystel* merely discloses the organization of data within a data structure based on generalized rules or components of an automated transition function and state-output functions. Appellants contend that the organization of data based on “generalized rules of components of an automata transition function and state-output functions” is not analogous to “performing dependency propagation for said plurality of sub-problems.

In the Reply Brief, the Examiner counters by again restating Column 10, lines 40-46 of *Meystel*, which discloses:

The resolutive structure development module 34 comprises means for developing a multiresolutional data (knowledge) structure based upon the “associative clusters,” which can transform the provisional relational model into a multilevel hierarchical relational structure with any required number of levels of resolution, including embedded local dynamics of the plant or process 14.

(*Meystel*, column 10, lines 40-46). Appellants disagree, however, with the Examiner’s conclusion that the development of the associative clusters is analogous to Appellants’ step of

“performing dependency propagation for said plurality of sub-problems,” as recited in Claims 2 and 13. In fact, with regard to the development of the “associative clusters,” *Meystel* merely discloses:

The associative fusion of data module 32 **forms a statement of rules from the data stored and organized by the experience organizer module 30**. The rules differ in the degree of belief which is assigned based upon **repetitiveness of the particular experiences** (statistical) or trustworthiness of the particular source of information (expert). The associative fusion of data module 32 comprises means for extraction of goal-independent data from the stored goal-dependent "experiences", in the form of **generalized rules, or components of an automata transition function and state-output functions**. The extraction means may comprise any standard algorithm and/or procedure for inverting experimental causalities into the statements of rules. Preferably, more sophisticated procedures are applied to the organized data, linked with algorithms and procedures of fusing the experiences into "associative clusters". Such clusters form a function oriented, goal-independent provisional model of the plant or process 14.

(Column 10, lines 8-24, emphasis added). Thus, while *Meystel* discloses “inverting experimental causalities into the statement of rules,” Appellants submit that there is no disclosure in *Meystel* indicating that such operations are analogous to “performing dependency propagation for said plurality of sub-problems,” as recited in Claims 2 and 13. Conspicuously absent from the Final Office Action’s allegation is any mention of sub-problems. Appellants submit that this omission is not coincidental since, as described above, *Meystel* does not use sub-problems or mathematical representations. Rather, *Meystel* merely discloses the organization of data within a data structure based on generalized rules or components of an automated transition function and state-output functions.

For at least these reasons, Appellants respectfully submit that the rejections of dependent Claims 2 and 13 are improper and should be reversed by the Board.

4. *Meystel does not disclose, teach, or suggest “executing a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining”*

The rejection of Claims 3 and 14 are improper at least because Claims 3 and 14 depend on independent Claims 1 and 12, respectively, which Appellants have shown above to be allowable. Additionally, Claims 3 and 14 are allowable over *Meystel* because the cited reference does not disclose, teach, or suggest the claim elements recited in Claims 3 and 14.

At pages 27-28 of the Appeal Brief, Appellants demonstrated that *Meystel* does not disclose, teach, or suggest “executing a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining,” as recited in Claims 3 and 14. Specifically, Appellants showed that *Meystel* merely discloses using “hierarchical clustering algorithms.” It continues to be Appellants’ position that there is no disclosure in *Meystel* that such hierarchical clustering algorithms are “graph-theoretic algorithms of mathematical equations,” as recited in Claims 3 and 14.

Furthermore, Appellants have repeatedly shown that *Meystel* specifically states that mathematical representations are not used. Appellants refer the Board to pages 27-28 of Appellants’ Appeal Brief for a detailed discussion of various example portions of *Meystel* that expressly state that *Meystel* does not use mathematical representations. Because *Meystel* stipulates that the system “is able to integrate information from diverse sources or subsystems and, **with out using models or equations**, to formulate plans or rules of system operation which provide the best performance according to a set of criteria of interest, subject to the constraints of available information” (Column 8, lines 35-40, emphasis added), Appellants continue to submit that *Meystel* can not be said to disclose, teach, or suggest “a plurality of mathematical equations” and certainly does not disclose, teach, or suggest “executing a graph-theoretic algorithm for a plurality of mathematical equations associated with said plurality of strongly-connected components to prevent over-constraining,” as recited in Claims 3 and 14.

For at least these reasons, Appellants respectfully submit that the rejections of dependent Claims 3 and 14 are improper and should be reversed by the Board.

5. *Meystel does not disclose, teach, or suggest “detecting a plurality of dependency relations within said plurality of sub-problems”*

The rejection of Claims 5 and 16 are improper at least because Claims 5 and 16 depend on independent Claims 1 and 12, respectively, which Appellants have shown above to be allowable. Additionally, Claims 5 and 16 are allowable over *Meystel* because the cited reference does not disclose, teach, or suggest the claim elements recited in Claims 5 and 16.

At pages 28-29 of the Appeal Brief, Appellants demonstrated that *Meystel* does not disclose, teach, or suggest “detecting a plurality of dependency relations within said plurality of sub-problems,” as recited in Claims 5 and 16. Specifically, Appellants showed that *Meystel* merely discloses that a “modeling subsystem 22 determines functional relationships of the organized data, which are searched by a behavior generation subsystem 24.” (*Meystel*, column 9, lines 40-42). Although discussing “functional relationships,” *Meystel* provides no indication that such functional relationships are analogous to Appellants’ recited “dependency relations.” Furthermore, Appellants have shown above that *Meystel* does not disclose, teach, or suggest “sub-problems” or that the data in the data structure is organized into “sub-problems.” Again, Appellants submit that this omission is not coincidental since, as described above, *Meystel* does not use sub-problems or mathematical representations. At best, *Meystel* is a decision processor that simply integrates data into a data structure for searching. The disclosed modeling subsystem of *Meystel* is not analogous to a system that decomposes decision inputs into a plurality of sub-problems. Additionally, There is no disclosure in *Meystel* of “detecting a plurality of dependency relations within said plurality of sub-problems,” as recited in Claims 5 and 16.

For at least these reasons, Appellants respectfully submit that the rejections of dependent Claims 5 and 16 are improper and should be reversed by the Board.

B. Claims 4, 6-8, 15, and 17-19 are patentable over the proposed *Meystel-Johnston* combination

The rejection of Claims 4, 6-8, 15, and 17-19 as being obvious over the proposed *Meystel-Johnston* combination is improper for at least the following reasons.

- 1. The proposed *Meystel-Johnston* combination does not disclose, teach, or suggest “*decomposing said converted first plurality of said received decision inputs and said second plurality of said received decision inputs to a plurality of mathematical equations and algebraically solvable graph components*”**

The rejection of Claims 4 and 15 are improper at least because Claims 4 and 15 depend on independent Claims 1 and 12, respectively, which Appellants have shown above to be allowable. Additionally, Claims 4 and 15 are allowable over the proposed *Meystel-Johnston* combination at least because the cited reference does not disclose, teach, or suggest the claim elements recited in Claims 4 and 15.

At pages 31-34 of the Appeal Brief, Appellants demonstrated that the proposed *Meystel-Johnston* combination does not disclose, teach, or suggest “decomposing said converted first plurality of said received decision inputs and said second plurality of said received decision inputs to a plurality of mathematical equations and algebraically solvable graph components,” as recited in Claims 4 and 15. Specifically, Appellants showed that *Johnston*, as relied upon by the Examiner, merely discloses that “[a] utilities calculation engine calculates the relative utility of each of the products or services to the user [available to the user] and presents output to the user, which indicates the relative utility of each of the products or services.” (*Johnston*, Abstract). The portion of *Johnston* cited by the Examiner discusses a “statistical algorithm implemented by utilities calculation engine 202” that involves the “calculation of “regression” coefficients for inserting into an equation representing the quantitative values chosen by a individual to measure his or her judgment of the importance of the difference between some best value of each important “attribute” and some worst value of the “attribute” . . .” (*Johnston*, Column 12, lines 38-42). With regard to matrix analysis, *Johnston* merely discloses that the matrix analysis renders “final set of data to be analyzed.” (Column 16, line 1). Specifically, “each row (of both the Y vector and the X matrix) represents a single response the “user” has given, the actual response being

recorded in the Y vector.” (Column 16, lines 23-25). “From this type data set, the B regression coefficients are calculated . . . Each B coefficient is paired with and thus modifies one “attribute.” (Column 16, lines 33-41). Thus, *Johnston* merely discloses using matrix analysis to calculate utilities for attributes identified by a user and discusses the calculation of regression coefficients for the matrix.

Appellants submit that there is no disclosure in *Johnston* that the regression coefficients are analogous to “algebraically solvable graph components,” as recited in Claims 4 and 15. There is only disclosure in *Johnston* that the regression components are used as attribute modifiers in a matrix of data. Further, there is no disclosure in *Johnston* of “decomposing . . . decision inputs to a plurality of mathematical equations and algebraically solvable graph components,” as recited in Appellants’ Claims 4 and 15. Applicants submit that the disclosure of using matrix analysis to calculate regression coefficients for a matrix of data based on the importance of the data to a user is not analogous to the recited operations. In fact, there is no disclosure of “a plurality of mathematical equations and algebraically solvable graph components,” as recited in Appellants’ claims. These claim elements are absent from the disclosures of *Meystel* and *Johnston*.

For at least these reasons, Appellants respectfully submit that the rejections of dependent Claims 4 and 15 are improper and should be reversed by the Board.

2. The proposed *Meystel-Johnston* combination does not disclose, teach, or suggest “*identifying a plurality of simultaneous equations within said plurality of sub-problems*”

The rejection of Claims 6 and 17 are improper at least because Claims 6 and 17 depend on independent Claims 1 and 12, respectively, which Appellants have shown above to be allowable. Additionally, Claims 6 and 17 are allowable over the proposed *Meystel-Johnston* combination at least because the cited reference does not disclose, teach, or suggest the claim elements recited in Claims 6 and 17.

At pages 31-34 of the Appeal Brief, Appellants demonstrated that the proposed *Meystel-Johnston* combination does not disclose, teach, or suggest “identifying a plurality of

simultaneous equations within said plurality of sub-problems,” as recited in Claims 6 and 17. In the Examiner’s Answer, the Examiner again relies upon the calculation of regression coefficients, as disclosed in *Johnston*, as being analogous to Applicants’ recited claim language. However, as discussed above with regard to Claims 6 and 17, *Johnston* merely discloses using matrix analysis to calculate utilities for attributes identified by a user and discusses the calculation of regression coefficients for the data in the matrix. (*See, Johnston*, Column 12, lines 38-42; Column 16, lines 1, 23-25, and 33-41). Appellants maintain that there is no disclosure in *Johnston* that the regression coefficients are analogous to “a plurality of simultaneous equations within [a] plurality of sub-problems,” as recited in Claims 6 and 17. There is only disclosure in *Johnston* that the regression components are used as attribute modifiers in a matrix of data. Further, Appellants submit that the disclosure of using matrix analysis to calculate regression coefficients for a matrix of data based on the importance of the data to a user is not analogous to Appellants’ step of “identifying a plurality of simultaneous equations within said plurality of sub-problems,” as recited in Appellants’ Claims 6 and 17. These claim elements are absent from the disclosures of *Meystel* and *Johnston*.

For at least these reasons, Appellants respectfully submit that the rejections of dependent Claims 6 and 17 are improper and should be reversed by the Board.

3. The proposed *Meystel-Johnston* combination does not disclose, teach, or suggest “solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems”

The rejection of Claims 7 and 18 are improper at least because Claims 7 and 18 depend on independent Claims 1 and 12, respectively, which Appellants have shown above to be allowable. Additionally, Claims 7 and 18 are allowable over the proposed *Meystel-Johnston* combination at least because the cited reference does not disclose, teach, or suggest the claim elements recited in Claims 7 and 18.

At pages 31-34 of the Appeal Brief, Appellants demonstrated that the proposed *Meystel-Johnston* combination does not disclose, teach, or suggest “solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems,” as recited in Claims 7 and 18. Specifically, Appellants showed that *Johnston* merely discloses using matrix analysis to calculate utilities for attributes identified by a user and discusses the calculation of regression

coefficients for the data in the matrix. (*See, Johnston*, Column 12, lines 38-42; Column 16, lines 1, 23-25, and 33-41). In the Examiner's Answer, the Examiner has not responded specifically to Appellants' arguments with respect to Claims 7 and 18. Accordingly, Appellants refer the Board to pages 31-34 of the Appeal Brief for a detailed discussion relating to the failure of the proposed *Meystel-Johnston* combination to disclose the features claimed in Appellants' Claims 7 and 18. Additionally, Appellants further submit that there is no disclosure in *Johnston* that regression coefficients are analogous to either of Appellants' recited "numerical sub-problems" or "algebraic sub-problems," as recited in Claims 7 and 18. There is only disclosure in *Johnston* that the regression components are used as attribute modifiers in a matrix of data. Further, Appellants submit that the disclosure of using matrix analysis to calculate regression coefficients for a matrix of data based on the importance of the data to a user is not analogous to Appellants' step of "solving a plurality of numerical sub-problems and a plurality of algebraic sub-problems," as recited in Claims 7 and 18. These claim elements are absent from the disclosures of *Meystel* and *Johnston*.

For at least these reasons, Appellants respectfully submit that the rejections of dependent Claims 7 and 18 are improper and should be reversed by the Board.

4. The proposed *Meystel-Johnston* combination does not disclose, teach, or suggest "solving a plurality of geometric relations sub-problems with an algebraic solution algorithm"

The rejection of Claims 8 and 19 are improper at least because Claims 8 and 19 depend on independent Claims 1 and 12, respectively, which Appellants have shown above to be allowable. Additionally, Claims 8 and 19 are allowable over the proposed *Meystel-Johnston* combination at least because the cited reference does not disclose, teach, or suggest the claim elements recited in Claims 8 and 19.

At pages 31-34 of the Appeal Brief, Appellants demonstrated that the proposed *Meystel-Johnston* combination does not disclose, teach, or suggest "solving a plurality of geometric relations sub-problems with an algebraic solution algorithm," as recited in Claims 8 and 19. In the Examiner's Answer, the Examiner again relies upon the calculation of regression coefficients, as disclosed in *Johnston*, as being analogous to Applicants' recited

claim language. However, as discussed above with regard to Claims 6 and 17, *Johnston* merely discloses using matrix analysis to calculate utilities for attributes identified by a user and discusses the calculation of regression coefficients for the data in the matrix. (*See, Johnston*, Column 12, lines 38-42; Column 16, lines 1, 23-25, and 33-41). Appellants maintain that there is no disclosure in *Johnston* that the regression coefficients are analogous to either of “a plurality of geometric relations sub-problems” or “algebraic solution algorithm,” as recited in Claims 8 and 19. There is only disclosure in *Johnston* that the regression components are used as attribute modifiers in a matrix of data. Further, Appellants submit that the disclosure of using matrix analysis to calculate regression coefficients for a matrix of data based on the importance of the data to a user is not analogous to Appellants’ step of “solving a plurality of geometric relations sub-problems with an algebraic solution algorithm,” as recited in Appellants’ Claims 8 and 19. There is no disclosure that the data in the matrix includes sub-problems or that they data is solved with an algebraic solution algorithm. These claim elements are absent from the disclosures of *Meystel* and *Johnston*.

For at least these reasons, Appellants respectfully submit that the rejections of dependent Claims 8 and 19 are improper and should be reversed by the Board.

C. One of ordinary skill in the Art would not have been motivated to make the proposed *Meystel-Johnston* combination

Appellants continue to submit that the proposed *Meystel-Johnston* combination is improper. For the reasons discussed at pages 35-37 in Appellants’ Appeal Brief, Appellants maintain that the Examiner has not demonstrated the requisite teaching, suggestion, or motivation in *Meystel*, *Johnston*, or the knowledge generally available to those of ordinary skill in the art at the time of the invention to modify or combine *Meystel* and *Johnston* in the manner the Examiner proposes. Additionally, Appellants maintain that one of ordinary skill in the art at the time of Appellants’ invention would not have been motivated to combine the disclosure of *Meystel* with that of *Johnston*.

In the Final Office Action, the Examiner posits that “it would have been obvious to one of ordinary skill in the art at the time the invention was made” to modify *Meystel* “as

seen in *Johnston*, as tool for making difficult decisions less complex . . . thus, making *Meystel* more effective and robust.” (*Final Office Action*, pages 5-7). However, since the teachings of *Johnston* are explicitly contrary to and inconsistent with those of *Meystel*, Appellants continue to maintain that the combination is improper. The mere possibility that a modification might improve *Meystel*, as the Examiner asserts, by making *Meystel* more “effective and robust” does not even remotely provide the required teaching, suggestion, or motivation to modify the teachings of *Meystel* to include the teachings of *Johnston*. If it were sufficient for Examiners to merely point to a purported advantage of one reference and conclude that it would have been obvious to combine or modify that reference with other references simply based on that advantage without consideration as to the actual purposes, objectives, and teachings of those references, then virtually any two or more references would be combinable just based on the fact the one reference states an advantage of its system. Of course, as the Federal Circuit has made clear, that is not the law.

In fact, the Federal Circuit has held that it is essential to view the invention as a whole, taking each element into account as well as the advantages, properties, utilities, and results of the invention. *In re Chupp*, 816 F.2d 643, 2 U.S.P.Q.2d 1437 (Fed. Cir. 1987). Even if both *Meystel* and *Johnston* relate to “improved decision making” as posited by the Examiner, *Meystel* specifically teaches away from the use of mathematical representations. For example, *Meystel* actually discloses that “[t]he present invention eliminates the stage of mathematical abstraction and parameter identification and instead, uses collected measurements (the data 16) to form a distributed multiresolutional knowledge representation which operated upon by search algorithms.” (Column 21, lines 59-63). As a provided advantage, *Meystel* stipulates that the multiresolutional decision support system “is able to integrate information from diverse sources or subsystems and, **with out using models or equations**, to formulate plans or rules of system operation which provide the best performance according to a set of criteria of interest, subject to the constraints of available information.” (Column 8, lines 35-40, emphasis added). Because *Meystel* teaches away from the use of models and equations, Appellants continue to submit that one of ordinary skill in the art at the time of Appellants’ invention to modify the multiresolutional decision support system disclosed in *Meystel* to include the calculation of regression coefficients and matrix analysis disclosed in *Johnston*.

For at least these reasons, Appellants respectfully submit that the proposed *Meystel-Johnston* combination is improper with respect to Appellants' Claims 4, 6-8, 15, and 17-19. Accordingly, the rejection of Appellants' claims over the proposed *Meystel-Johnston* combination should be reversed by the Board.

D. One of ordinary skill in the art would not have been motivated to modify the proposed *Meystel-Johnston* combination to include “solving a plurality of simultaneous equations with a Newton-Raphson algorithm or Modified Gram-Schmidt algorithm”

The Examiner also relies on the proposed *Meystel-Johnston* combination to reject Claims 10 and 21. For reasons analogous to those discussed at pages 35-37 in Appellants' Appeal Brief and those discussed above in Section E of this Reply Brief, Appellants submit that the proposed *Meystel-Johnston* combination is improper. Specifically, Appellants submit that the Examiner has not demonstrated the requisite teaching, suggestion, or motivation in *Meystel*, *Johnston*, or the knowledge generally available to those of ordinary skill in the art at the time of the invention to modify or combine *Meystel* and *Johnston* in the manner the Examiner proposes. Additionally, Appellants maintain that one of ordinary skill in the art at the time of Appellants' invention would not have been motivated to combine the disclosure of *Meystel* with that of *Johnston*.

Further, Appellants continue to submit that one of ordinary skill in the art would not have been motivated to modify the proposed *Meystel-Johnston* combination to include “solving a plurality of simultaneous equations with a Newton-Raphson algorithm or Modified Gram-Schmidt algorithm,” as recited in Claims 10 and 21. Appellants refer the Board to pages 37-39 of Appellants' Appeal Brief for a detailed discussion of why the proposed modification would not have been obvious to one of ordinary skill in the art. Additionally, Appellants note that throughout prosecution, the Examiner has done nothing more than state that the “Newton-Raphson and Modified Gram-Schmidt algorithms are well known in the art.” (Examiner's Answer, page 13). Appellants submit that such a conclusory assertion does not provide the requisite teaching, suggestion, or motivation in *Meystel*, *Johnston*, or the knowledge generally available to those of ordinary skill in the art at the time of the invention to modify the teachings of *Meystel* and *Johnston* in the manner the Examiner proposes. If it

were sufficient for Examiners to merely point to a purported advantage of a proposed modification and conclude that it would have been obvious to modify one or more references simply based on that advantage, then virtually any reference could be modified in any manner. The Federal Circuit has made clear that this is not the law.

The M.P.E.P. sets forth the strict legal standard for establishing a *prima facie* case of obviousness based on modification of prior art references. As stated in Appellants' Appeal Brief, "[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art" at the time of the invention." M.P.E.P. § 2143.01. Even the fact that references *can* be modified does not render the resultant modification or combination obvious unless the prior art teaches or suggests the desirability of the modification or combination. *See Id.* (citations omitted). According to the Federal Circuit, "a showing of a suggestion, teaching, or motivation to combine or modify prior art references is an essential component of an obviousness holding." *In re Sang-Su Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 2002) (quoting *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 U.S.P.Q.2d 1456, 1459 (Fed. Cir. 2000)). Even a determination that it would have been obvious to one of ordinary skill in the art at the time of the invention to try the proposed modification or combination is not sufficient to establish a *prima facie* case of obviousness. *See In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988).

In the Final Office Action, the Examiner concludes that "the Newton-Raphson algorithm and Modified Gram-Schmidt algorithms are old and well known in the art" and that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to include Newton-Raphson algorithm or Modified Gram-Schmidt algorithm in *Meystel*." (*Final Office Action*, page 7). As motivation for the proposed modification, the Examiner speculates that such a modification would make *Meystel* "more efficient and robust." (*Final Office Action*, page 7). However, the Examiner has not cited any evidence of a teaching, suggestion, or motivation to modify the teachings of *Meystel*. Instead, the

Examiner has merely stated that the teachings of one reference would improve the teachings of another reference. The Examiner's summary conclusion amounts to mere speculation and does not provide the suggestion or motivation necessary to make the proposed combination. The mere possibility that a modification might improve *Meystel*, as the Examiner asserts, does not even remotely provide the required teaching, suggestion, or motivation to modify the teachings of *Meystel*. Rather, this statement represents the subjective belief of the Examiner, does not point to any known authority, and therefore is not based on objective evidence of record. It appears that the Examiner has merely proposed alleged advantages of modifying *Meystel* (advantages which Appellants do not admit could even be achieved by modifying *Meystel* in the manner the Examiner proposes).

For at least these reasons, Appellants respectfully submit that the proposed modification of *Meystel* is improper with respect to Appellants' Claims 10 and 21. Accordingly, the rejection of Appellants' claims over the proposed *Meystel-Johnston* combination should be reversed by the Board.


CONCLUSION

Appellants have demonstrated that the present invention, as claimed, is clearly distinguishable over the prior art cited by the Examiner. Therefore, Appellants respectfully request the Board to reverse the final rejections and instruct the Examiner to issue a Notice of Allowance with respect to all pending claims.

Appellants believe that no fees are due; however, the Commissioner is hereby authorized to charge any fees or credit any overpayment to Deposit Account No. 02-0384 of Baker Botts, L.L.P.

Respectfully submitted,

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Date: March 11, 2008

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